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In the matter of)
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Petition to Amend)
Part 15 of the Commission's Rules)
To Permit Use of Radio Frequency)
Above 40GHz for New Radio)
Applications)
)

ET Docket No. 94-124
RM-8308

PETITION OF RECONSIDERATION FOR THE THIRD REPORT AND ORDER

August 20, 1998

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I, Shigeaki Hokusui of Harmonix Corporation, file this petition on August 20, 1998, in the FCC's **the third report and order ET Docket No. 94-124, FCC 98-150.**

SUMMARY

1. The Third Report and Order, ET Docket No. 94-124 (FCC 98-150) describes the spectrum etiquette in sections 10 and 11. This requires registration of transmitter identification at the coordination channel at 59.0 ~ 59.05GHz. This requirement would create financial and technical hardship for both manufactures and end users of 59~64GHz systems. Furthermore the requirement would represent political unfairness since it penalizes smaller companies not involved in the consortium.

The BASIS FOR THE PETITION

2. Modulation, demodulation, access and conflict resolution, which are all required for utilization of the coordination band, have not been specified in the proposed regulation. It is our understanding that no member of the consortium of large corporations that proposed this

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Petition to the ET 94-124

etiquette is ready for a product release in the near future. Our company has been developing high speed point-to-point radio system for outdoor use. We have adopted to the part 15 requirement published so far, and we are ready now to release our product. This proposed rule, however, will delay our product release and subsequently increase the cost of the product. This regulation appears to be an unfair tactic designed to squelch our small but innovative business and let the big corporations catch up.

3. The document specifies that 59.0~59.05GHz is used as a coordination registration band with a 24-bit identification. As Section 15.255 (d) states, the intent is to coordinate operation between diverse transmitters. Primarily, it seems this works for coordinating indoor wireless LAN systems to optimize speed and cost effectiveness at the consumer application level. This has two flaws:
 - a) The requirement drives up the cost of a product that does not operate with diverse transmitters since it ordinarily does not need coordination channels to prevent interference; the manufacturer must add additional hardware to accommodate for these coordination channels... In particular, if a product uses a frequency far apart from the specified coordination band, it must now add a second transmitter to meet the requirement. This alone could double the manufacturing cost.
 - b) The identification would not resolve the location and origin of the interference, unless a publicly known standardized methodology for modulation, demodulation, access and conflict resolution in the coordinate channel is established.

PROPOSED SOLUTION

4. In the 59-64GHz band, the directional nature of RF energy and the high atmospheric absorption from oxygen molecules provides incidental spatial partitioning. Any significant interference is an unlikely event. The only potential interference arises with diverse transmitters that operate with undirected high power. In general, any system with controlled power should be free from this cumbersome regulation. In particular, it is unlikely that a focused transmitter located outside will interfere with other systems, including diverse systems. Furthermore, in the rare event of any interference from a focused transmitter, it is easy to identify the origin of interference and its location using a detector with a focused antenna. Thus, point-to-point focused transmitters should be excluded from the identification requirement. This identification scheme could be proven useful in the future when the methodology is published for indoor LAN systems with diverse transmitters and the wealth of the coordination technique is shared by the industry. Therefore it is good idea *for any other transmitters to stay clear from 59.0~59.05GHz coordination band. I think the requirement for the identification should be removed altogether until a standard is set. Or, at least define what is a diverse transmitter and only apply the requirement to the diverse transmitters.*

A suggested wording for the spectrum etiquette 10 and 11 reads as follows: (underlined sentences are the proposed changes):


10. The proposed spectrum etiquette called for a coordination channel in the 59.0-59.05 GHz band. This coordination channel is intended for diverse transmitters, and any other device should not transmit in the 59.0-59.05 GHz band. In addition, the proposed spectrum etiquette requires diverse transmitters to register within any one second interval of transmission, a

transmitter identification consisting of the FCC ID number, serial number of the transmitter and 24 bytes of user definable data in the 59.0-59.05 GHz band. A diverse transmitter is a transmitter operating with a wide beam, half-power beam width in the E and H plane, equal to or greater than 60 degrees and an average output power equal to or greater than 0.1 mW in the 59.05-64 GHz band to transmit. The modulation, demodulation, access, and conflict resolution method in the coordinate channel must be promptly available to the public from the manufacturers of the transmitter.

Further, the proposed etiquette also specified a peak emissions limit of $18 \mu\text{W}/\text{cm}^2$, as measured three meters from the transmit antenna. Moreover, the proposed spectrum etiquette limited the peak transmitter output power to 500 mW. Finally, the proposed spectrum etiquette contained a limit on the peak output power of transmitters that use less than 100 MHz bandwidth in the 59.05-64 GHz band in accordance with the following equation: $P_{\text{peak}} \leq 500 \text{ mW} * [\text{Transmitter Bandwidth} / 100 \text{ MHz}]$. Further, we indicated that a pulse desensitization correction factor must be applied if the bandwidth of the measuring instrument is less than the pulse repetition frequency.

11. The coordination channel from 59.0-59.05 GHz provides access to the spectrum that will be used to determine methods of limiting potential interference and establishing techniques for spectrum sharing between diverse systems. In addition, the transmitter output power and peak emission limits will minimize the potential for interference and provide for greater spectrum reuse. We note that when taking these measurements the operator of the measurement equipment is responsible for following the guidelines contained in the measurement equipment manufacturer's manual.¹ Moreover, the transmitter identification requirement for diverse transmitters operating with a wide beam, half-power beam width in the E and H plane, equal to or greater than 60 degrees and more than 0.1 mW of output power is essential to provide for successful sharing and coordination between users. We believe the etiquette adopted herein will accelerate the development and production of low cost devices. Accordingly, the Commission will adopt the proposed transmitter identification requirements, coordination channel, transmitter output power limitation and the peak emission limit for unlicensed operation in the 59-64 GHz band only in the case of diverse transmitters.

Submitted by:



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August 20, 1998